centre: 1. Cochlea; 2. Post. division of eighth pair. 3. Trapezium of same side, then crossing to, 4. Part of lemniscus; 5. Post. pair of corpora quadrigemina; 6. Internal geniculate body; 7. Corona radiata; 8. Cortex of auditory field. B. S.

The Cortical Origin of the Fibres of the Anterior Commissure in Man.

By Dr. N. Popoff. (*Neurol. Centralblatt*, No. 22, 1886.)

The best authorities are at variance regarding the anatomical relations of these fibres. Some (Burdach, Meynert, Gratiolet, and others) traced the fibres of the anterior commissure into the temporal and occipital lobes; others claimed that they were spread throughout the whole area of the gyrus fornicatus. Ganser claimed that certain fibres of the anterior commissure originated in the olfactory bulbs. Popoff now publishes a case of softening in the occipito-temporal region. On the left side the softening involved the whole of the gyrus lingualis and the posterior portion of the inner margin of the gyrus fusiformis; on the right side the softened area was of a similar extent. On both sides the softening had penetrated as far as the lateral ventricles. The posterior surface of the right cerebellar hemisphere, and a considerable part of the superficial portion of the pulvinar were also softened. These foci of softening were due to a well-developed cylindrical aneurism of the basilar artery, all branches of this artery exhibiting marked atheromatous changes, and both *arteriæ occipatales* (Duret) having been blocked by large thrombi.

Microscopical examination of the brain-axis revealed degeneration of all the fibres of the posterior division of the anterior commissure. Gratiolet's visual fibres, which are near one focus of softening, were slightly affected, while the bundles of fibres from the olfactory bulbs to the anterior commissure exhibited no distinct changes. It must be noted, in addition, that the temporal lobes were not involved in the disease. From these facts the author concludes, 1. That the posterior division of the anterior commissure is mainly instrumental in connecting the two gyri linguales, but that it is extremely doubtful whether any considerable portion of these fibres take their origin in the temporal lobes; 2. That there is a negative proof that there are no fibres from the gyri linguales to the medulla oblongata; this being in accord with Charcot's views that focal lesions in the occipital lobe are not followed by secondary degeneration in the crura cerebri. Prof. Flechsig adds a note, reporting a similar case in corroboration of the above conclusions. B. S.

PHYSIOLOGY OF THE NERVOUS SYSTEM.

Recent Experiments on the Time-Sense, and on the Perception of Space.

There have appeared in Mind during the year 1886 several original researches that are of interest apart from their special physiological bearing. In a series of experiments on the Time-Sense, Mr. L. F. Stevens reaches conclusions directly opposed to those of Vierordt, Mack, and the pupils of Wundt. His method of experimenting, like that of Vierordt, consisted in impressing on the mind intervals of time by means of a metronome, and in reproducing the same after the metronome had been stopped. Vierordt found that the reproduced interval was larger than the standard when this was small; shorter when it was great; and between the two extremes was an interval which could be reproduced quite accurately. This "indifference-point" was not the same for different intervals, but varied between 1.5 and 3.5 seconds. Stevens, on the contrary, finds that there is an interval of time, the value of which varies between .53 and .87 sec., which can be reproduced with considerable accuracy; but with all other intervals an error is made which is *plus* for those above and *minus* for those below the so-called indifference-point. The results of several other experimenters agree with Stevens in fixing the indifference-point at about .71 sec., but otherwise are in accord with Vierordt.

Stevens attempts no explanation of the discrepancy, and leaves the question open, to be solved by future experiment. It seems fair to conclude, however, that we have within us some sort of a "time-keeper" that is set to measure intervals of about .71 sec., but which cannot be trusted to measure accurately intervals either longer or shorter.

In his research on THE PERCEPTION OF SPACE BY DISPARATE SENSES, Dr. Jastrow enters a field almost wholly new, and obtains some interesting and valuable results. His problem has been to compare and determine the relative accuracy of judgments of linear extension by the *eye*, the *hand*, and the *arm*. The comparisons are made by reproducing judgments made (1) by judging lengths by fixating the eyes on them without motion of the eyeball; (2) by judging distances between thumb and forefinger ("span"); and (3) by judging distances by guiding a pencil over them with a free arm movement.

Each sense is in turn made a *receiving* sense and an *expressing* sense, according as it receives the linear impression, or expresses it by a length that is judged to be equal to the first.

Great ingenuity is shown in the construction of the apparatus for receiving the various impressions and expressing the judgments, and the results are important in showing the errors that we all make in judging linear extension.

If the *eye* is both receiving and expressing sense, small lengths will be underestimated, and large lengths exaggerated. If the *hand* is both receiving and expressing sense, small lengths will be exaggerated, and large lengths underestimated. If the *arm* is both receiving and expressing sense, all lengths will be exaggerated.